

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

This opinion (1) was not written for publication and
(2) is not binding precedent of the Board.

Paper No. 29

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FUMIHIRO ITO,
KEIJI FUKUZAWA,
and SHINOBU TSURUMARU

Appeal No. 95-3900
Application No. 07/978,030¹

ON BRIEF

Before CALVERT, FLEMING, and TORCZON, Administrative Patent
Judges.

TORCZON, Administrative Patent Judge.

¹ Attorney docket no. P90.2775-B.

DECISION ON APPEAL

BACKGROUND

This is an appeal under 35 U.S.C. § 134 from the final rejection of claims 2-7,² 9 and 10, all of the pending claims. We affirm in part and add new grounds of rejection.

² The notice of appeal excludes claims 5-7, but the arguments on appeal are directed to all claims.

The application on appeal was filed 18 November 1992. Appellants claim the benefit of 07/606,901, filed 31 October 1990 (abandoned), pursuant to 35 U.S.C. § 120. They also claim the benefit of Japanese patent application 290921/89, filed 8 November 1989, pursuant to 35 U.S.C. § 119, but they have not perfected their claim pursuant to 37 CFR § 1.55(a).

The subject matter of the invention is a planar-array microwave antenna. Claim 9, the sole independent claim, defines the subject matter of the invention as follows:

9. A planar array antenna comprising:

an upper plate having a plurality of holes;

a lower plate;

a single film substrate having resonance type printed patterns of a plurality of array elements sized in accordance with a predetermined frequency, said predetermined frequency being approximately the center of a frequency band;

a first spacer having a plurality of holes, and being located between said upper plate and said single film substrate; and

a second spacer having a plurality of holes, and being located between said lower plate and said single film substrate, wherein said lower plate has integral concave regions formed at the positions corresponding to the positions of said plurality of holes of said upper plate, each of said concave regions having a surface facing and parallel to said substrate and said surface being spaced from said patterns by a distance less than one quarter wavelength at said frequency.

The examiner relied on the following references in
rejecting the claims:

Rammos (Rammos EP)	EP 0 317 414 A1 ³	pub'd. 24 May 1989
Wildey et al. (Wildey)	EP 0 384 780 A2	pub'd. 29 Aug.

1990⁴

Rammos (Rammos)	US 5,061,943	29 Oct. 1991
		filed 31 July 1989

All claims were rejected under 35 U.S.C. § 102 as anticipated by Wildey. The examiner rejected claims 2, 5-7, 9, and 10 under 35 U.S.C. § 103 as having been obvious in view of Rammos. Claims 3 and 4 were rejected under section 103 as having been obvious in view of the combined teachings of Rammos and Rammos EP.

DISCUSSION

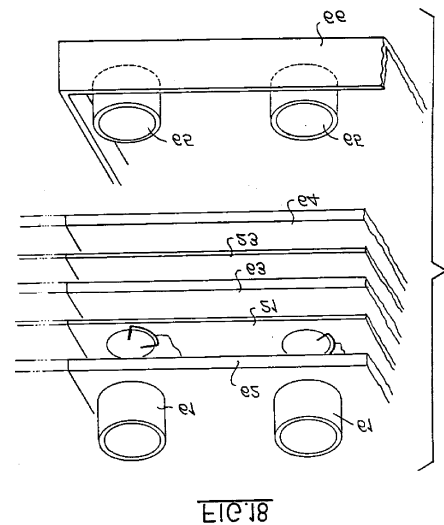
Claim 9 requires a "lower plate [that] has integral concave regions formed at the positions corresponding to the positions of said plurality of holes of said upper plate". The examiner relies on "[t]he tray 29 and lands 23 of Wildey

³ Our understanding of this reference depends on a translation prepared for the Office, a copy of which is attached.

⁴ Appellants claim the benefit of a foreign priority date of 8 November 1989. They have not, however, challenged the admissibility of the Wildey reference, nor perfected their priority claim by filing a certified translation pursuant to § 1.55(a).

et al[. to] provide the structure for defining the 'integral concave regions', shown in cross section in Figure 4." (Paper 24 at 7.) Although we must give claims their broadest reasonable interpretation consistent with the specification, we do not consider it reasonable to interpret "concave regions" to include the structure shown in Wildey's Figure 3, which is a single concavity at best. Consequently, we do not find a preponderance of evidence supporting the examiner's case for anticipation of claim 9. Dependent claims 2-7 and 10 are, likewise, not anticipated.

In rejecting claim 9 as obvious in view of Rammos, the examiner relies on the embodiment of Rammos' Figure 17 and Figure 18 (right) for the basic structural elements of the claim. This embodiment includes a lower plate or housing 66 with concavities 65,⁵ a printed



⁵ See In re Morris, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1028 (Fed. Cir. 1997), for the breadth of the word "integral" absent a positive showing by the appellant that "integral" means "one-piece". Appellants have made no such

circuit substrate 23, and spacers 63 and 64. The examiner identifies foam layer 62 as the upper plate with holes. Appellants never specifically challenge this finding (see Paper 23 (App. Br.) at 3). We agree with the examiner's rejection subject to the following amplification. Rammos' claim 11 (with its antecedents) teaches the use of an upper plate ("layer of conductive material formed on and supported by said sheet of dielectric material", claim 1) in conjunction with "means ... for forming cavities" (claim 11) and the use of apertures in the spacer dielectric materials (claims 4 and 10). Moreover, Rammos contemplates a cavity depth measured from the upper conductive layer of approximately one quarter wavelength (Claim 1). See In re Geisler, 116 F.3d 1465, 1469-70, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997) (A claimed range may be obvious in view of a close prior art value absent unexpected results or a teaching away.) Even if Rammos used exactly one-quarter wavelength, once the thickness of the sheet of dielectric material is factored in, the depth of the cavity from the printed patterns will be less than one-quarter wavelength. Consequently, we affirm the rejection of

showing on the record before us.

claim 9 as unpatentable under section 103 in view of the teachings of Rammos taken as a whole.

Appellants argue "the individual elements of the dependent claims are not taught as being combined with the subject matter as specified in Claim 9". (Paper 23 at 4.) They have not, however, argued any of the individual claim elements with the degree of specificity required under our rules. 37 CFR § 1.192(c)(5) (1988); 37 CFR § 1.192(c)(7) (1997). Moreover, such nominal arguments run the risk of being non-responsive in the face of more specific findings presented by the examiner. For instance, the examiner posits that the plate thicknesses recited in claims 2 and 5 are design expedients within the skill of the art. This finding, while unsupported, is quite plausible. Appellants' argument that these limitations "are not taught" in the reference misses the point of the rejection. Consequently, we affirm the section 103 rejection for claims 2 and 5 because the preponderance of evidence (i.e., the examiner's unchallenged finding) supports the rejection.

Claims 6 and 7 require patterns of a plurality of array element connected to each other to form a specific direction of circular polarization. The examiner contends that Rammos' "film substrate 23 has printed patterns of resonance array

elements, all arranged as claimed." (Paper 21 at 3.) This finding is consistent with Rammos' subarrays. (5:44-58; Figs. 9-11.) Consequently, the preponderance of evidence supports the examiner's rejection of these claims.

Claim 10 recites a frequency ("approximately 12 GHz") and a specific concavity spacing (5 mm). One-quarter wavelength at 12 GHz is 6.25 mm. (Ramos 5:12-13.) Ramos discloses only a 12 GHz array. Thus, a person having ordinary skill in the art would have been motivated to apply any of Ramos' embodiments to a 12 GHz array. Ramos teaches the use of a spacing distance between the printed circuit and the ground plane, H_L (4:4-6), such that H_L is at least 1 mm and "about $\frac{8}{4}$ ", which at 12 GHz is 6.25 mm. (5:7-17.) The teaching of about is sufficient to motivate a person having ordinary skill in the art to optimize H_L starting at 6.25 mm. Since thickness is a matter of concern in the art, the artisan would have been motivated to find an effective value below 6.25 mm. To the extent there is any criticality associated

with 5 mm at all,⁶ routine optimization would have revealed it.⁷

Claim 3 requires the concave regions to be made by press forming of the lower plate. The examiner finds that for analogous arrays Rammos EP teaches press forming (stamping) of the ground plate. (Paper 21 at 4; Rammos EP (trans.) at 5-6.) Appellants counter that the Rammos EP cavities are located differently, which misses the point of the rejection. We agree that Rammos and Rammos EP in combination would provide motivation to form the cavities of Rammos using the method of Rammos EP. The press-forming process of Rammos EP is a simpler and cheaper way to form the cavities of Rammos.

Claim 4 depends from claim 3 and requires that the concave regions be formed by machining, presumably in addition to the press forming required by claim 3. It is not clear to

⁶ Criticality of a particular value is best established with reference to the closest prior art. In re Baxter Travenol Labs., 952 F.2d 388, 392, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991). The closest prior art at 12 GHz would be H_L. 6.25 mm. (Ramos at 5:7-17.) Appellants only compare their claimed value, 5 mm, to 1 mm. (Paper 1 at 11.) Ramos indicates that 1 mm is the lowest possible value, not the best value. (5:7-17.) Hence, Appellants have not established that 5 mm is anything more than an arbitrarily selected value in a known range.

⁷ Appellants' specification suggests that optimization of parameters is well within the ordinary level of skill. (Paper 1 at 12:17-19.)

us what Appellants intend by this method of making. The specification teaches a cutting process (Paper 1 at 13; Fig. 5) and a press-molding process (Paper 1 at 13; Fig. 8), but it does not teach the use of both together. We suspect that Appellants did not intend for claim 4 to depend from claim 3, but it has done so since it was originally filed and we must take the claims as we find them. Consequently, we will reverse the rejection of claim 4 pro forma, not because it is necessarily wrong, but because the claim is so unclear as to make a proper application of art impossible. In re Steele, 305 F.2d 859, 862-63, 134 USPQ 292, 295 (CCPA 1962); In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

NEW GROUND OF REJECTION

We reject claim 4 as indefinite under 35 U.S.C. § 112[2]. As noted above, claim 4 requires both press forming and machining to form the cavities on the lower plate. The specification does not teach this combination of process steps except in original claim 4, nor can we discern how these steps are related. The cutting process of Figure 5 and the press forming of Figure 8 (Paper 1 at 13) appear to be incompatible. Appellants bear the burden of claiming as precisely as

possible. In re Morris, 127 F.3d at 1056, 44 USPQ2d at 1029.

In the present case, they have not met that burden.

We also reject claims 3 and 9 under section 103 in view of Wildey's admitted prior art (Figure 1), which appears to show the structure of claim 9. The "comprising" language of claim 9 would not exclude Wildey's additional plate 14. Wildey reports that the spacers are not shown for simplicity. (3:54-58.) The cavities 17 are "quarter-wave cavities" (3:49-53), which is sufficiently near the claimed range for concavities to require explanation or distinction. See Geisler, 116 F.3d at 1469, 43 USPQ2d at 1365 (A close value may shift the burden of going forward.). As we have previously indicated, a person having ordinary skill in the art would want to reduce thickness and would, thus, have been motivated to seek optimal values at or below a quarter-wave. (See also Wildey at 4:33-36 (reducing stretch, which is a linear function of cavity depth **d**, is desirable).) Since the cavities are formed by pressing (4:28-31), the method limitation of claim 3 would have been obvious as well.

DECISION

We reverse the section 102 rejection of all claims. We reverse the section 103 rejection of claim 4 pro forma in view

of our new rejection for indefiniteness. We affirm the section 103 rejections of claims 2, 3, 5-7, 9, and 10.

With respect to the affirmed rejections, Appellants may file a single request for rehearing within two months from the date of the original decision. 37 CFR § 1.197(b).

We enter new grounds of rejection for claim 4 under 112[2] (indefiniteness) and for claims 3 and 9 under section 103. A new ground of rejection is not final for purposes of judicial review.

With respect to the new rejections, Appellants must WITHIN TWO MONTHS FROM THE DATE OF THE DECISION exercise one of the following two options with respect to the new ground of rejection to avoid termination of proceedings (37 CFR § 1.197(c)) as to the rejected claims:

(1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner. . . .

(2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record. . . .

37 CFR § 1.196(b). If Appellants elect further prosecution before the examiner pursuant to 37 CFR § 1.196(b)(1), the effective date of the affirmance will be deferred until conclusion of the prosecution before the examiner in order to

preserve their right to review under 35 U.S.C. §§ 141 or 145 with respect to the affirmed rejections unless, as a mere incident to the limited prosecution, the affirmed rejection is overcome.

If Appellants elect prosecution before the examiner and this does not result in allowance of the application, abandonment, or a second appeal, this case should be returned to the Board for final action on the affirmed rejection, including any timely request for rehearing.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a). 37 CFR § 1.136(b).

AFFIRMED-IN-PART; 37 CFR § 1.196(b)

IAN A. CALVERT)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
MICHAEL R. FLEMING)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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